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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,800	02/22/2002	Shinichi Nishida	NEC A337	1754
27667	7590	08/24/2004	EXAMINER	
HAYES, SOLOWAY P.C. 130 W. CUSHING STREET TUCSON, AZ 85701			DI GRAZIO, JEANNE A	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/081,800

Applicant(s)

NISHIDA ET AL.

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-123 is/are pending in the application.
- 4a) Of the above claim(s) 1-52 and 113-123 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 53-55, 58-60, 65-67, 70, 72, 74, 79, 80, 88, 91, 92, 94-98, 100 and 104-112 is/are rejected.
- 7) ☒ Claim(s) 56, 57, 61-64, 68, 69, 71, 73, 75-78, 81-87, 89, 90, 93, 99 and 101-103 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 06/2004, 03/2002.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claims***

Claims 53-112 are pending with claims 53, 111 and 112 having been amended by Applicant's Response of May 27, 2004.

### ***Priority***

Priority to Japanese Patent Applications 2001-48473 (Feb. 23, 2001) and 2001-350620 (Nov. 15, 2001) is claimed.

### ***Response to Amendment***

The Remarks and 131 Declaration filed on May 27, 2004 under 37 CFR 1.131 have been considered but are ineffective to overcome the Kim et al. (US 2002-0057411 A1) reference for at least the following reasons.

It is respectfully pointed out that Applicant has not specifically pointed out Applicant's claimed subject matter in the foreign document (Japanese language of 155 pages) submitted with Applicant's 131 Declaration. It is respectfully noted that Applicant has made conclusions in regard to conception and reduction to practice without factual support. It is furthermore respectfully noted that Applicant has not provided positive actions to establish diligence.

The 131 Declaration is ineffective for at least the above reasons and there may yet be other outstanding issues with regard to said Declaration.

***Claim Objections***

Claim 111 stands objected to because of the following informalities.

As to claim 111 (amended), Applicant has amended claim 111 to recite “a sealed opening of said first substrate extends in a direction perpendicular to a direction in which said data lines extend” is not defined in Applicant’s Specification. This limitation is neither defined in the Specification in such a way that the Examiner can ascertain what this limitation means nor is this limitation shown in any of Applicant’s figures. The Examiner is unable to interpret the claimed limitation in light of the Specification and drawings and presumes that the limitation is met by the prior art of record.

Appropriate correction is **required**.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 2871

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 53-55, 58-60, 65-67, 70, 72, 74, 79-80, 88, 91-92, 94-98, 100, 104-110 and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2002/0057411 A1) in view of Hasegawa et al. (US 6,219,019 B1).

As to claims 53 (amended) and 111 (amended), Kim has, with reference to Figures 9A and 9B, a first substrate (illustrated in Figure 1 as substrate 1), a second substrate located opposing the first substrate (illustrated in Figure 1 as substrate 2), and a liquid crystal layer sandwiched between the first and second substrates (illustrated in Figure 1 as LC 3), wherein the first substrate includes a thin film transistor having a gate electrode (113), a drain electrode (145) and a source electrode (143), a pixel electrode each associated to a pixel to be driven (165-167), a common electrode to which a reference voltage is applied (162, 168, 169), data lines (141), a scanning line (not shown), common electrode lines (161), said gate electrode is electrically connected to said data lines, said source electrode is electrically connected to said pixel electrode, and said common electrode is electrically connected to said common electrode lines [0049], said pixel electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), said common electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), said common electrode is composed of a transparent material [0049] and is formed on a layer located closer to the liquid crystal layer than the data lines, said common electrode entirely overlaps said data lines with an insulating layer being sandwiched therebetween except an area where said data lines are located in the vicinity of said scanning lines (Figures 9A and 9B and 0049), said in-plane switching mode active matrix

Art Unit: 2871

type liquid crystal display device further includes a light impermeable layer is formed on the second substrate or on the first substrate such that the light impermeable layer and said liquid crystal layer are located at the same side with respect to said data lines and that said light impermeable layer faces said data lines (ABS, entire patent), said light impermeable layer is comprised of a black matrix (ABS, entire patent), and said data lines extend in a zigzag along said pixel electrode (Figures 9A and 9B). It may be presumed that the common electrode is electrically connected to said common electrode lines through a contact hole in each of pixels.

It may be presumed that the in-plane switching mode liquid crystal display device of Kim et al., furthermore has two-directional electric fields almost parallel with a surface of said first substrate applied across the pixel and common electrode. It may be presumed, for the purpose of the instant examination, that the device of Kim et al., has first and second sub pixel areas to which electric fields of different directions are applied.

Kim does not appear to explicitly specify that the black matrix layer (or multi-layered color layers) has a width smaller than a width of said common electrode overlapping the data lines.

Hasegawa has a liquid crystal display apparatus and method of driving the display whereby a black matrix is formed on an inside of the second substrate (Column 24, Lines 24-25). Furthermore, Hasegawa has a layered color filter formed on a part of the black matrix where the layered color filter is formed into the shape of a column-like projection having length  $7\mu\text{m}$ , width  $4\mu\text{m}$ , and height of  $2\mu\text{m}$  (Id., Lines 24-40). The layered color filter projection of width smaller than that of the transparent common electrode functions as a spacer to maintain distance between first and second substrate (Id.).

Hasegawa is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to form a layered color filter projection onto a black matrix where the layered color filter projection has a width smaller than that of the transparent common electrode to function as a spacer for maintaining the distance between first and second substrates.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Hasegawa to form a layered color filter projection onto a black matrix where the layered color filter projection has a width smaller than that of the transparent common electrode to function as a spacer for maintaining the distance between first and second substrates.

As to claim 54, Kim has a common electrode electrically connected to said common electrode lines through a contact hole in each of said pixels (For example [0062] and entire patent).

As to claim 55, Kim illustrates (Figures 9A and 9B) data lines, common electrode and said pixel electrode bent by one in each of pixels.

As to claims 58-60 and 105-106, Kim illustrates a black matrix layer facing data lines and the black matrix takes the form of a zigzag (For example [0057])(Please note that a line may technically include a zigzag or bent shape because a line need not necessarily be straight to be defined as a line).

As to claims 65-67 and 104, Kim has a color filter in the shape of a line (entire patent)(Please note that a line may technically include a zigzag or bent shape because a line need not necessarily be straight to be defined as a line).

As to claims 70 and 72, As illustrated in at least Figures 9A and 9B, Kim shows zig-zag shaped data lines having linear portions inclining towards the left and right from a direction in which the data lines extend ; first linear portions extending in parallel with a direction in which the data lines extend, and second linear portions inclining towards the left and right from the direction in which the data lines extend.

As to claim 74, the limitation “coverages” is not defined in Applicant’s Specification. The Examiner presumes that the “coverages” are met by the prior art of record.

As to claim 79, Kim teaches that the pixel electrode is composed of a transparent material [0049].

As to claim 80, in Kim, the common electrode and pixel electrode are formed in a common layer (Abstract, entire patent).

As to claim 88, Kim teaches that the pixel electrode is formed of a second metal layer of which the data lines are formed (entire patent).

As to claims 91-92, the interlayer insulating film may be organic or inorganic [0049].

As to claims 94-98 and 107-110, Kim teaches the specific materials of the insulating film [0049].

As to claim 100, the transparent electrode is composed of Indium-Tin-Oxide [0049].



Claim 112 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2002/0057411 A1) in view of Ono et al. (US 6,356,331 B1).

As to claim 112 (amended), Kim has, with reference to Figures 9A and 9B, a first substrate (illustrated in Figure 1 as substrate 1), a second substrate located opposing the first substrate (illustrated in Figure 1 as substrate 2), and a liquid crystal layer sandwiched between the first and second substrates (illustrated in Figure 1 as LC 3), wherein the first substrate includes a thin film transistor having a gate electrode (113), a drain electrode (145) and a source electrode (143), a pixel electrode each associated to a pixel to be driven (165-167), a common electrode to which a reference voltage is applied (162, 168, 169), data lines (141), a scanning line (not shown), common electrode lines (161), said gate electrode is electrically connected to said data lines, said source electrode is electrically connected to said pixel electrode, and said common electrode is electrically connected to said common electrode lines [0049], said pixel electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), and said common electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B).

It may be presumed that the in-plane switching mode liquid crystal display device of Kim et al., furthermore has two-directional electric fields almost parallel with a surface of said first substrate applied across the pixel and common electrode. It may be presumed, for the purpose of the instant examination, that the device of Kim et al., has first and second sub pixel areas to which electric fields of different directions are applied.

Kim does not appear to explicitly specify that an isolated floating electrode formed of a layer of which said gate electrode or said drain electrode is formed overlaps said common

Art Unit: 2871

electrode or said pixel electrode at bending portions of said zigzag-shaped common or pixel electrode with an insulting film being sandwiched therebetween and at least one of said common and pixel electrodes have a projection projecting from bending portions of said zigzag-shaped common and pixel electrodes in a direction in which said bending portions project, along a boundary between said first and second sub pixel areas.

Ono teaches and discloses an in-plane switching liquid crystal display device wherein (with reference to Figure 26) a floating electrode overlaps a common electrode and an insulating film is interposed between the pixel and counter (common) electrodes. Ono goes on to teach that since the lines of electric force applied to the liquid crystal are increased by the voltage dividing effect of the protective film a low-resistance type of material can be selected for the material of the liquid crystal so that it is possible to achieve the advantage of obtaining a display that is reduced in image retention (Ono, Column 14, Lines 32-38).

Ono is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to incorporate the floating electrode overlapping the common electrode into an in-plane switching device for a display reduced in image retention.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Ono for a display reduced in image retention.

***Allowable Subject Matter***

Claims 56, 57, 61-64, 68-69, 71, 73, 75-78, 81-87, 89-90, 93, 99 and 101-103 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 56-57, 61-64, 68-69, 71, 73, 75-78, 81-87, 89-90, 93, 99 and 101-103, relevant prior art of record did not disclose alone or in combination an in-plane mode active matrix type liquid crystal display device wherein data lines, common electrode and pixel electrode are bent in accord with Applicant's recited relation of number and length and in further combination with Applicant's other recited limitations as featured in the dependent claims.

The above limitations appear to result in a novel in-plane switching active matrix device.

***Response to Arguments***

Applicant has presented no arguments regarding the art rejections of the claims.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 2871

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio  
Patent Examiner  
Art Unit 2871

JDG



**DUNG T. NGUYEN**  
**PRIMARY EXAMINER**